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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/903,527	07/13/2001	Ki Seon Kim	EM/BEU/KIMK3006	2145

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EXAMINER
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WILLIAMS, LAWRENCE B

ART UNIT	PAPER NUMBER
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2634

DATE MAILED: 11/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

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## Office Action Summary

Application No.

09/903,527

Applicant(s)

KIM ET AL.

Examiner

Lawrence B Williams

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 13 July 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 is/are rejected.
- 7) ☒ Claim(s) 2-4 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 July 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Objections***

1. Claim 1 is objected to because of the following informalities:
  - a.) Examiner suggests applicant insert an “a” in line 1 between of and one.
  - b.) Examiner suggests applicant insert an “a” in line 5 between using and one.
2. Claim 2 is objected to because of the following informalities:
  - a.) Examiner suggests applicant delete line 6: “[Equation 6]”.
3. Claim 3 is objected to because of the following informalities:
  - a.) Examiner suggests applicant delete line 7: “[Equation 7]”.
  - b.) Examiner suggests applicant insert “the” in line 9 between is and tap-value and also between for and k-th.

Appropriate correction is required.

4. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Belotserkovsky et al. (US Patent 6,711,221 B1) in view of Pal (US Patent 6,353,629 B1).

Belotserkovsky et al. discloses a method of compensating signal distortion of one-tap equalizer bank for an orthogonal frequency division multiplexing (OFDM) system, which compensates the subcarrier signal distortion in a OFDM system caused by multi-path fading channels by using one-tap equalizer bank, characterized by: compensating signal distortion by calculating a tap-value of an equalizer for one subcarrier. (col. 1, lines 26-51).

However, Belotserkovsky et al. does not teach compensating signal distortion by calculating a tap-value of an equalizer for one subcarrier using the tap-values the equalizers for adjacent subcarriers.

However, Pal teaches calculating a tap-value of an equalizer for one subcarrier using the tap-values the equalizers for adjacent subcarriers (col. 7, lines 28-31).

Therefore, it would have been obvious to one skilled in the art to combine the teachings of Pal with those of Belotserkovsky et al. as a more efficient technique to shorten channel lengths in multicarrier modulation systems (col. 4, lines 5-10).

***Allowable Subject Matter***

7. Claims 2-4 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The following is a statement of reasons for the indication of allowable subject matter: the instant application discloses a method of compensating signal distortion in an orthogonal frequency division multiplexing (OFDM) system. The prior art fails to teach a method “wherein said tap-value an equalizer is calculated by the following equation:  $C_k = f(C_{k-1}, C_{k+1})$ , where,  $C_k$  is tap value of an equalizer for k-th subcarrier” as taught in claim 2.

### *Conclusion*

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a.) Fu et al. Discloses in US 2003/0026200 A1 a Programmable Transceiver Structure of Multi-Rate OFDM-CDMA for Wireless Multimedia Communications.

b.) Seo et al. Discloses in US 2004/0008764 A1 a Pre-Equalizer, VSB Transmission System Using the Same, and Transmission Method Thereof.

c.) Bahai et al. discloses in US Patent 6,097,770 Frequency Offset Estimation For Wireless Systems Based on Channel Impulse Response.

d.) Parr et al. discloses in US Patent 5,537,419 Receiver Sample Timing Adjustment Using Channel Impulse Response.

e.) Seki et al. discloses in US Patent 6,304,624 B1 Coherent Detecting Method Using a Pilot Symbol and a Tentatively Determined Data Symbol, A Mobile Communication Receiver and An Interference Removing Apparatus Using the Coherent Detecting Method.

f.) Strait discloses in US Patent 6,608,864 B1 a Method and Apparatus for Fault Recovery in a Decision Feedback Equalizer.

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10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lawrence B Williams whose telephone number is 571-272-3037. The examiner can normally be reached on Monday-Friday (8:00-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 571-272-3056. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lawrence B. Williams

lbw  
October 30, 2004

  
AMANDA T. LE  
PRIMARY EXAMINER